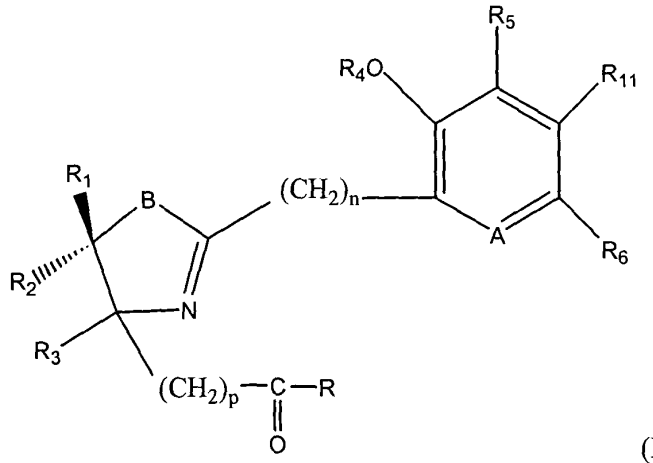
CLAIMS

What is claimed is:

1. A method of suppressing radical formation *in vitro*, comprising the step of contacting a solution with a compound represented by Structural Formula (I):



(I)

wherein:

R is -OH, -$OR_7$, -N(OH)$R_8$;

$R_1$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

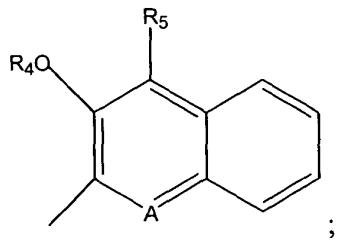
$R_2$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is -H or -$CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

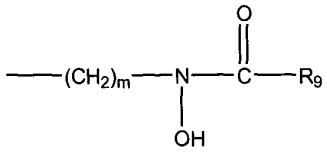
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:



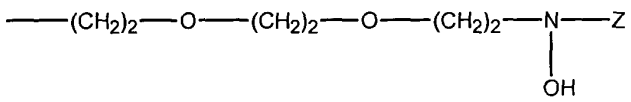
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

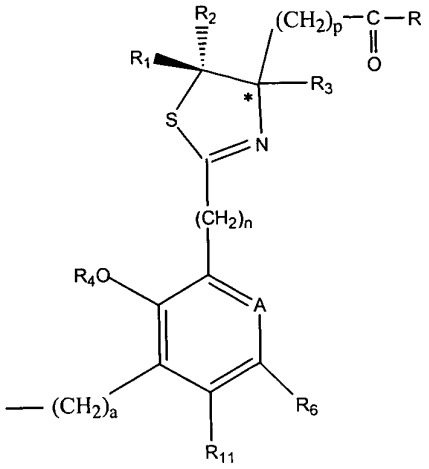
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

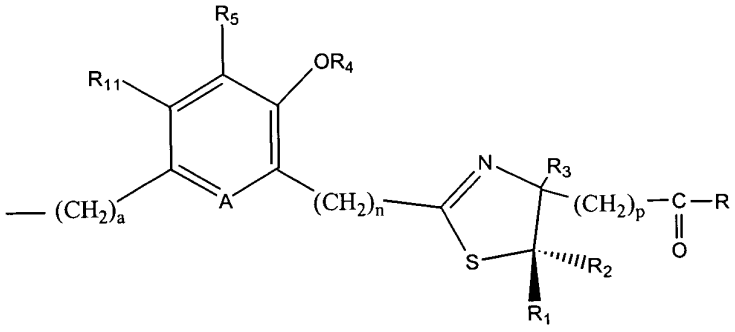
p is 0, 1 or 2;

X is



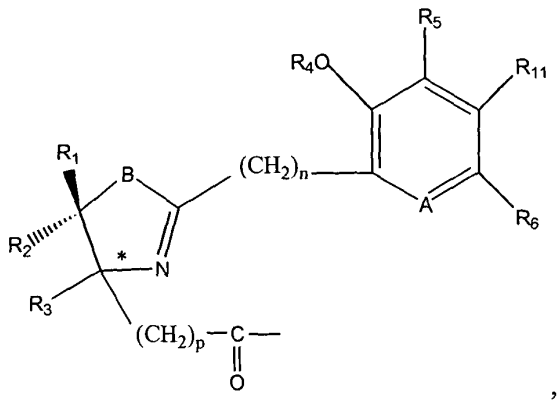
;

Y is



; and

Z is

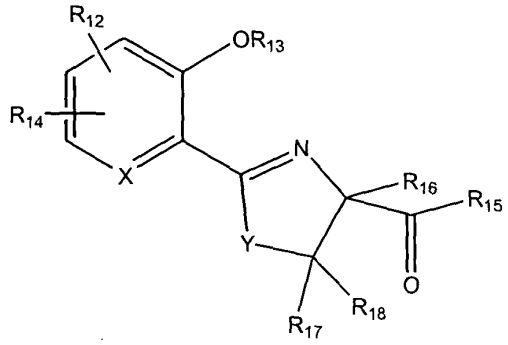


,

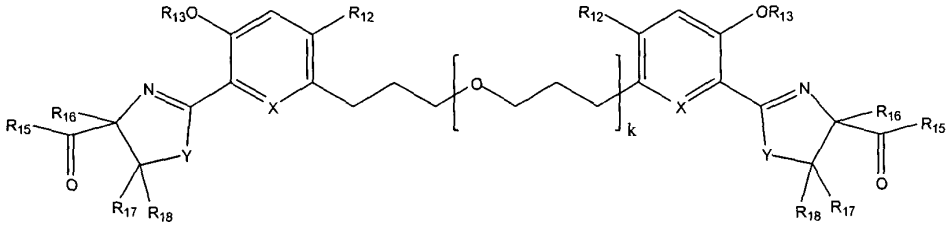
wherein each of the substituents shown is defined above;

or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$ and $R_2$ are –H, $R_3$ is $–CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0.

2. A method of suppressing radical formation *in vitro*, comprising the step of contacting a solution with a compound represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, –$OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, -$R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, -$OR_{20}$, or –N($R_{20}$)OH;

X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is –$CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

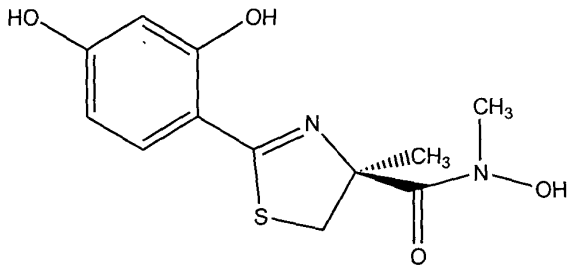
3. The method of Claim 2, wherein wherein iron(III) is present and the ratio of the compound to iron is greater than or equal to about 0.25.

4. The method of Claim 3, wherein the ratio of the compound to iron is greater than or equal to about 0.5 and less than or equal to about 2.0.

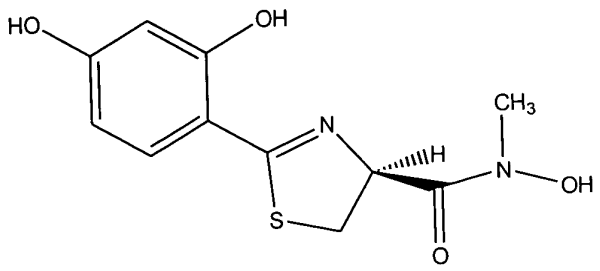
5. The method of Claim 2, wherein hydrogen peroxide, an organic peroxide, or a nitrosothiol is present.

6. The method of Claim 2, wherein $R_{12}$ is –H, –OH, or $–OCH_3$; $R_{13}$ is –H; $R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, and $R_{20}$ are each independently –H or $–CH_3$; $R_{15}$ is –OH or $–N(R_{20})OH$; and k is 1 or 2.

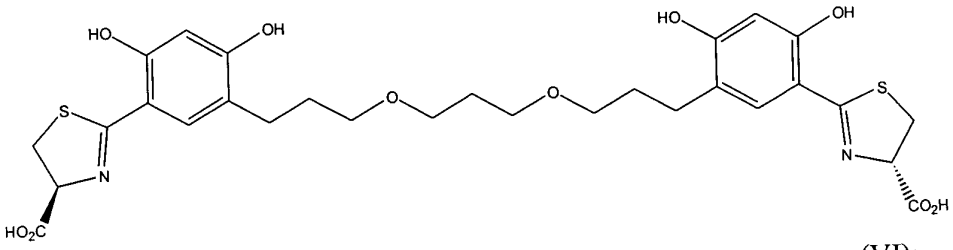
7. The method of Claim 6, wherein the compound is represented by a structural formula selected from the group consisting of:



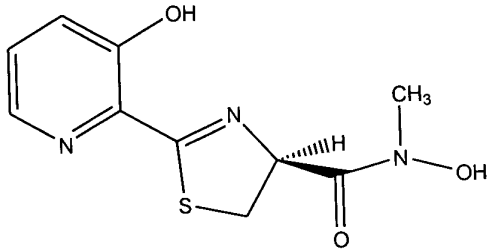

(IV);



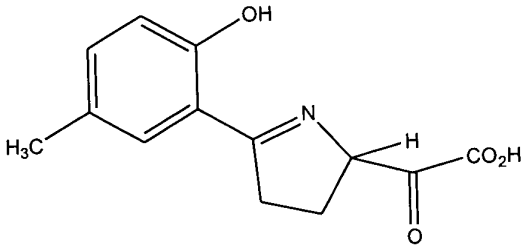
(V);



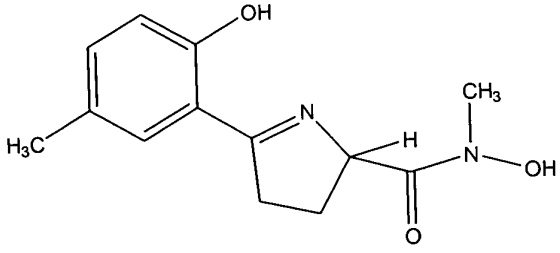
(VI);



(VII);

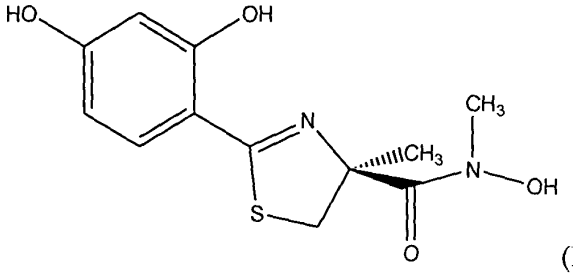


(VIII); and

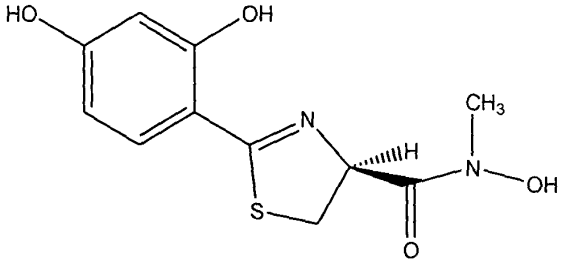


(IX).

8. The method of Claim 7, wherein the compound is represented by a structural formula selected from the group consisting of:

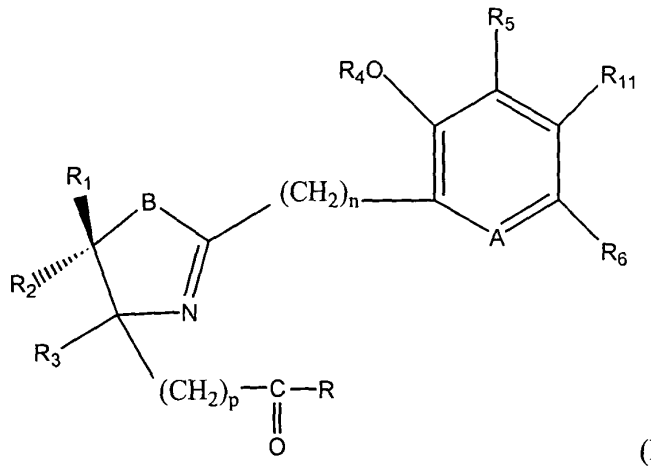


(IV) and



(VI).

9. A method of treating a patient to suppress radical formation, provided said patient is not suffering from inflammatory bowel disorder or trivalent metal overload, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (I):



(I)

wherein:

R is -OH, -$OR_7$, -N(OH)$R_8$;

$R_1$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

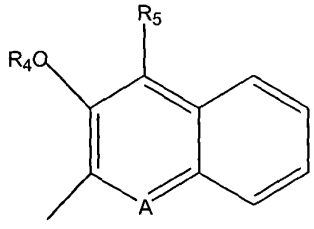
$R_2$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, -$CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

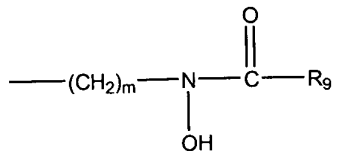
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows



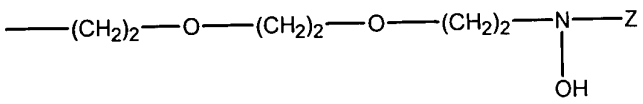
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

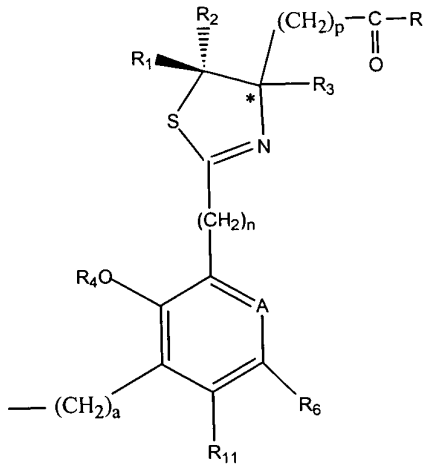
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

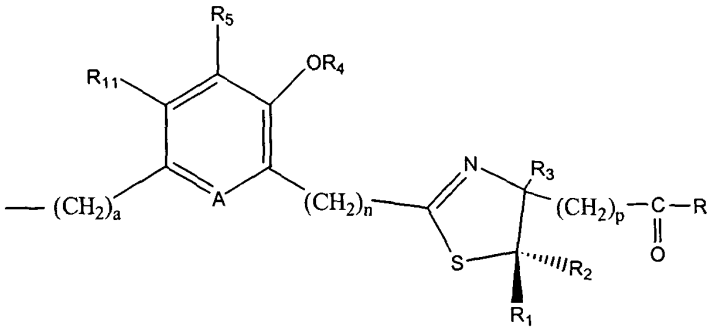
p is 0, 1 or 2;

X is



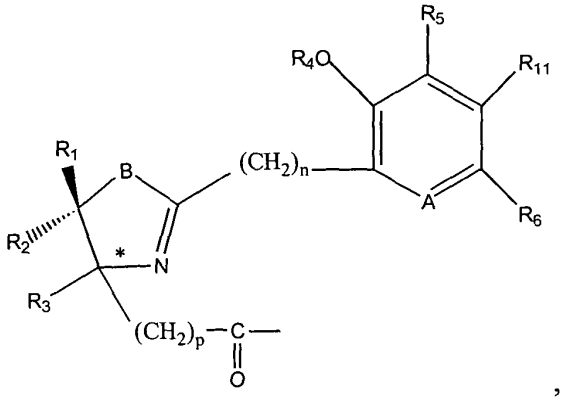
;

Y is



; and

Z is

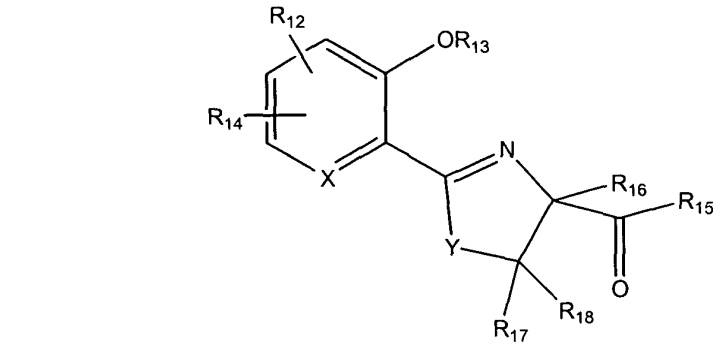


,

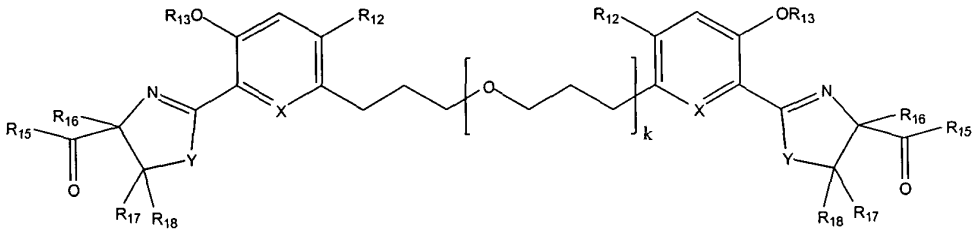
wherein each of the substituents shown is defined above;

or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$ and $R_2$ are –H, $R_3$ is $-CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0.

10. A method of treating a patient to suppress radical formation, provided that said patient is not suffering from inflammatory bowel disorder or trivalent metal overload, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, –$OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, -$R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, -$OR_{20}$, or –N($R_{20}$)OH;

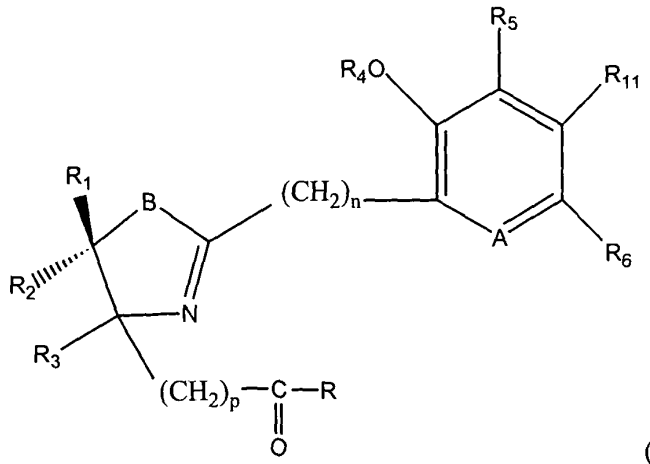
X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is –$CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

11. A method of treating a patient who is suffering from, has suffered from, or is at risk of suffering from an ischemic episode, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (I):



(I)

wherein:

R is -OH, -$OR_7$, -N(OH)$R_8$;

$R_1$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

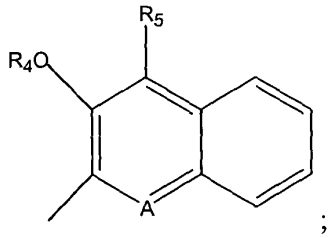
$R_2$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, -$CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

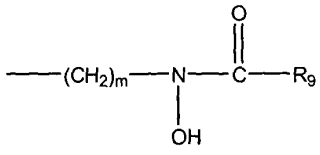
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:



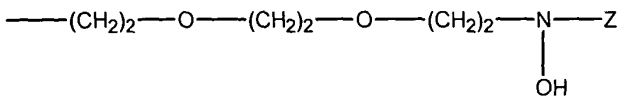
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

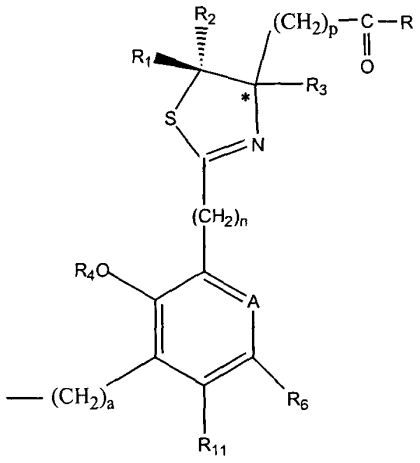
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

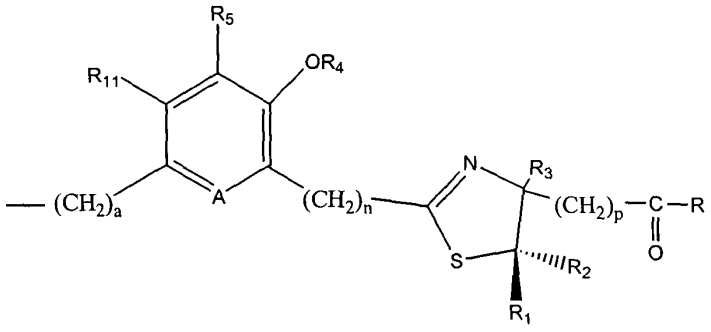
p is 0, 1 or 2;

X is



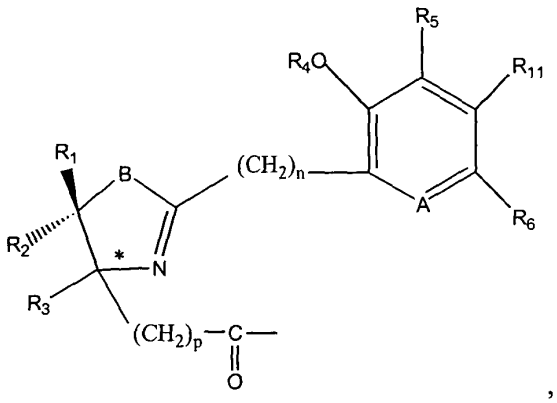
;

Y is



; and

Z is

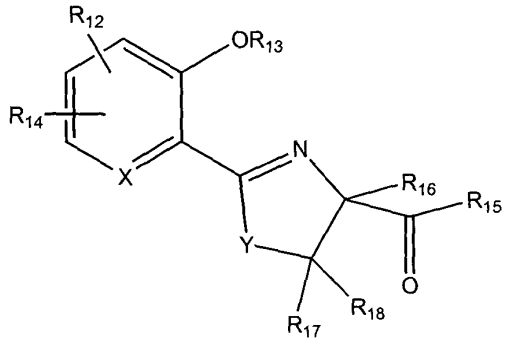


,

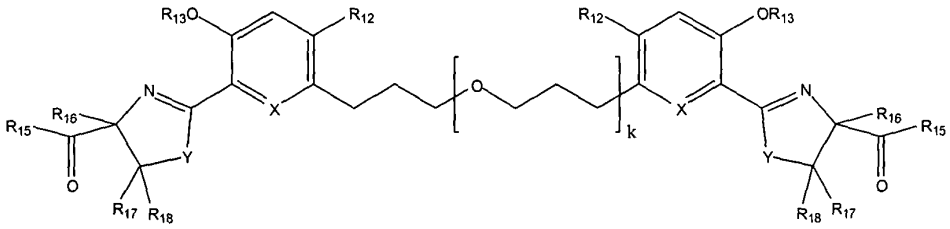
wherein each of the substituents shown is defined above;

or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers.

12. A method of treating a patient who is suffering from, has suffered from, or is at risk of suffering from an ischemic episode, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, –$OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, -$R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, -$OR_{20}$, or –N($R_{20}$)OH;

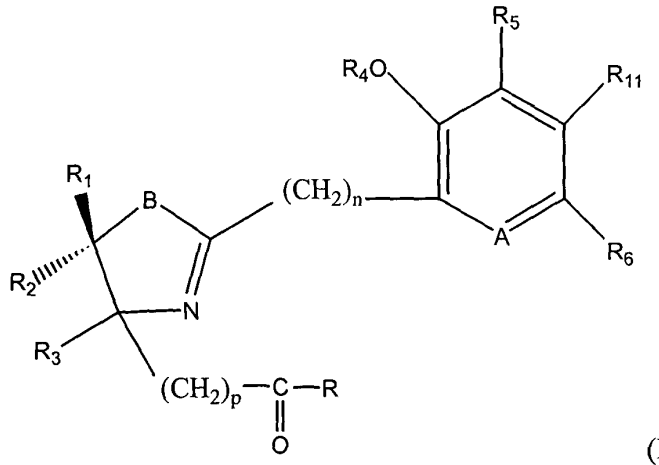
X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is –$CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

13. A method of treating a patient who is suffering from an inflammatory disorder, provided said inflammatory disorder is not inflammatory bowel disorder, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (I):




(I)

wherein:

R is -OH, -$OR_7$, -N(OH)$R_8$;

$R_1$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

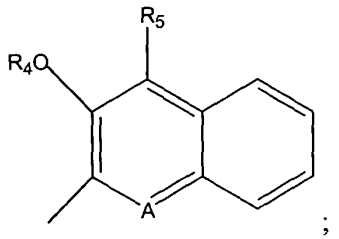
$R_2$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, -$CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

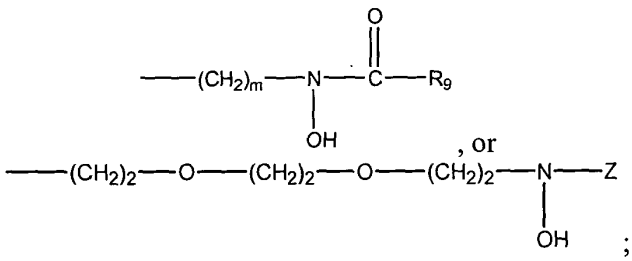
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:




;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,




;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

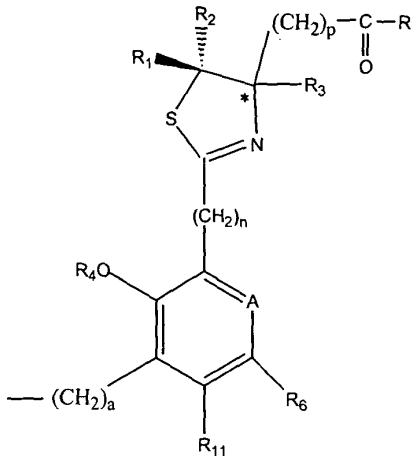
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

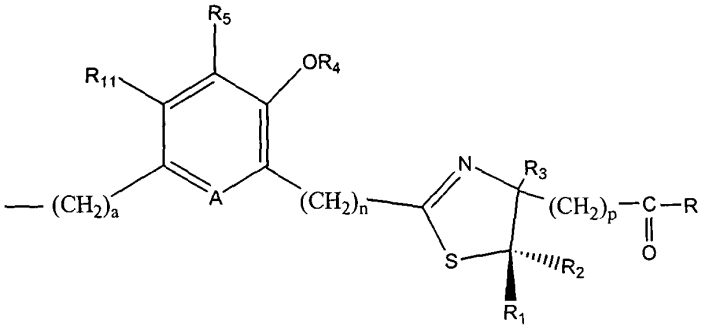
p is 0, 1 or 2;

X is



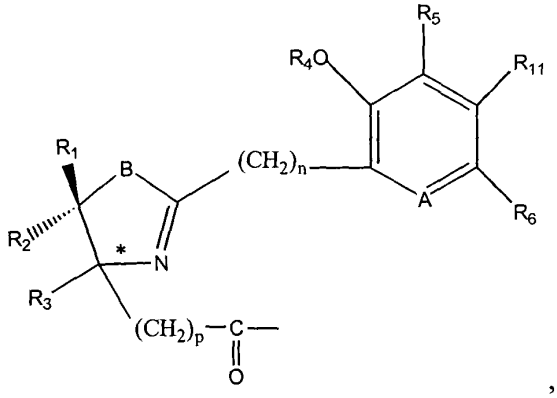
;

Y is



; and

Z is



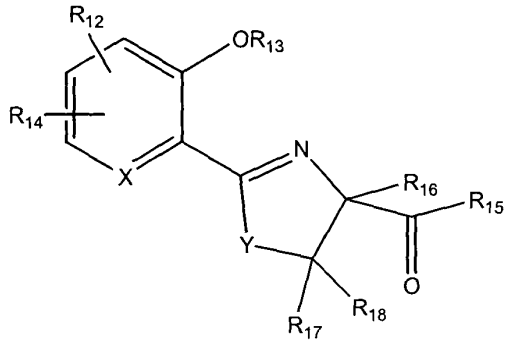
,

wherein each of the substituents shown is defined above;

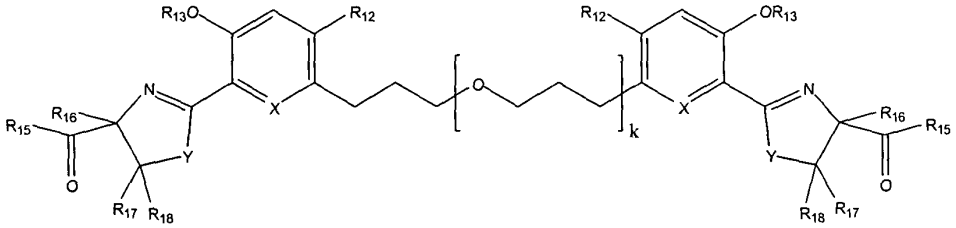
or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the

compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$ and $R_2$ are –H, $R_3$ is $–CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0.

14. A method of treating a patient who is suffering from an inflammatory disorder, provided said inflammatory disorder is not inflammatory bowel disorder, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, $–OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, $-R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, $-OR_{20}$, or $–N(R_{20})OH$;

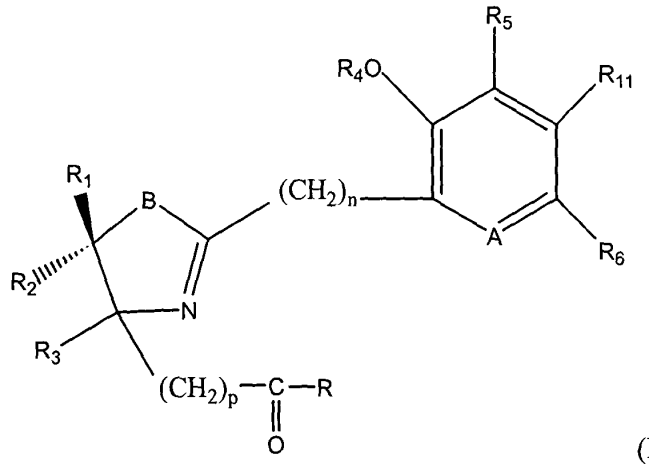
X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is $-CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

15. A method of treating a patient who is suffering from neoplastic disease or a preneoplastic condition, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by Structural Formula (I):




(I)

wherein:

R is -OH, $-OR_7$, $-N(OH)R_8$;

$R_1$ is –H, $-CH_3$, or an alkyl of 1-6 carbons;

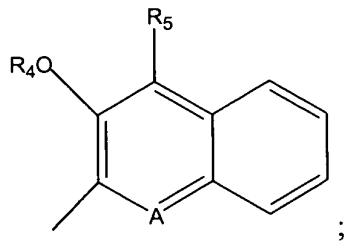
$R_2$ is –H, $-CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, $-CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

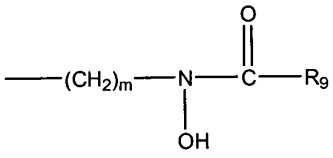
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:



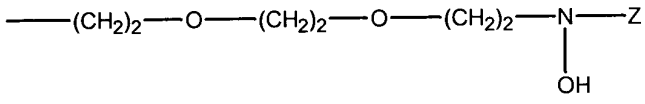
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

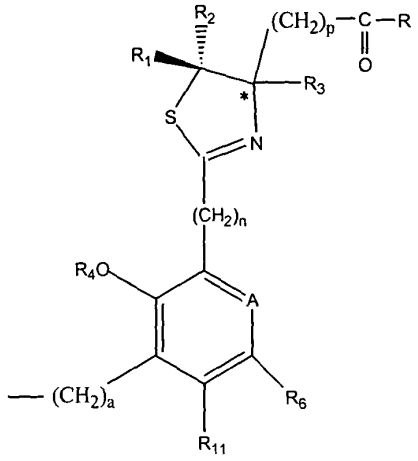
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

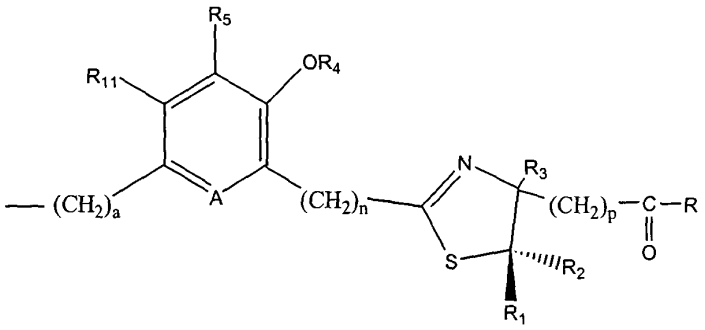
p is 0, 1 or 2;

X is



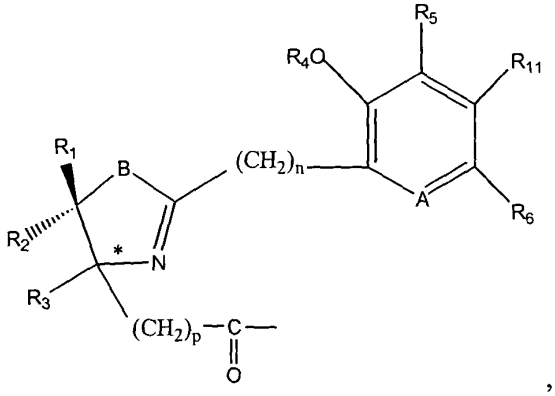
;

Y is



; and

Z is



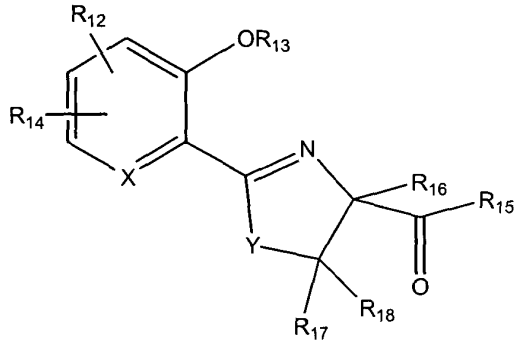
,

wherein each of the substituents shown is defined above;

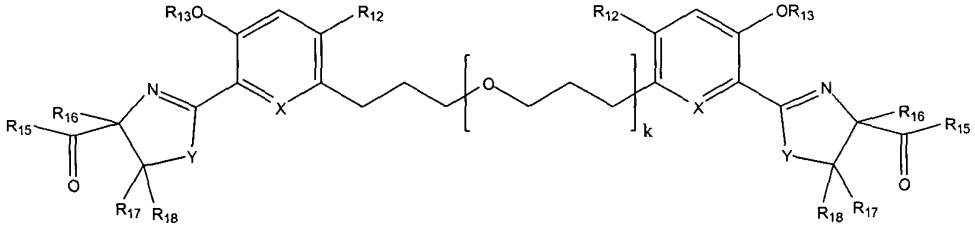
or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$

and $R_2$ are –H, $R_3$ is –H or $–CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0, and when R is –OH, $R_1$, $R_2$ and $R_3$ are –H, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is CH, and B is S, then n and p are not 0.

16. A method of treating a patient who is suffering from neoplastic disease or a preneoplastic condition, comprising the step of administering to said patient a therapeutically effective amount of a compound represented by represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, $–OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, $-R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, $-OR_{20}$, or $–N(R_{20})OH$;

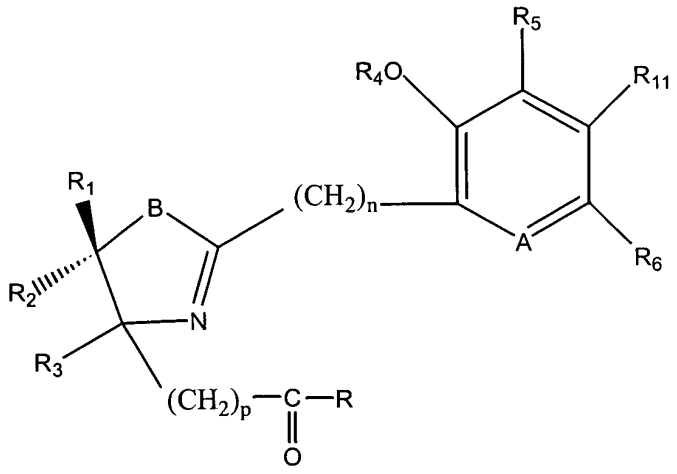
X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$ and $R_{14}$ are -H, $R_{13}$ is –H or $-CH_3$, $R_{15}$ is -OH, $R_{16}$ is $–CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S, and when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is -OH, $R_{16}$ is $–CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is CH, then Y is not S.

17. A method of preventing or inhibiting oxidation of a substance *in vitro*, comprising the step of contacting said substance with an effective amount of an antioxidant represented by Structural Formula (I):




(I)

wherein:

R is -OH, $-OR_7$, $-N(OH)R_8$;

$R_1$ is –H, $-CH_3$, or an alkyl of 1-6 carbons;

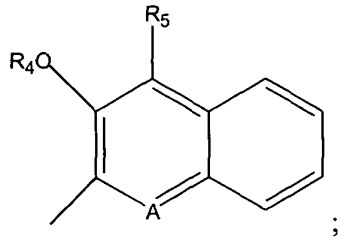
$R_2$ is –H, $-CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, $-CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

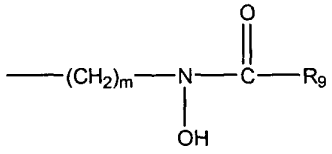
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:



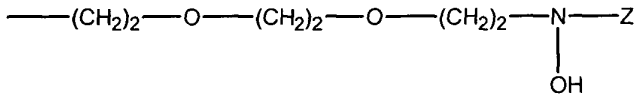
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

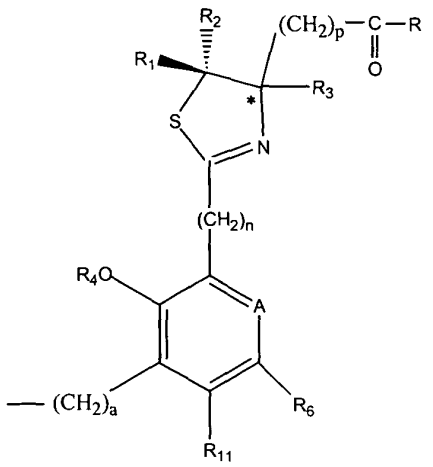
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

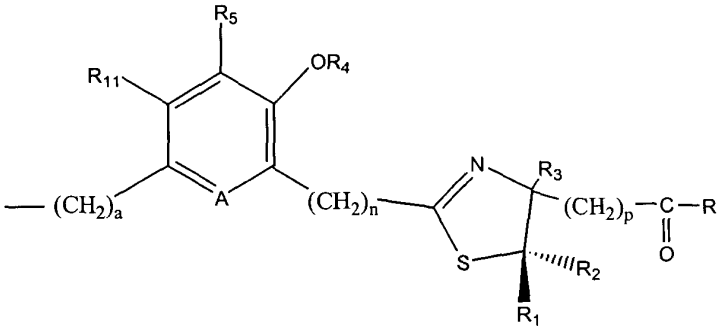
p is 0, 1 or 2;

X is



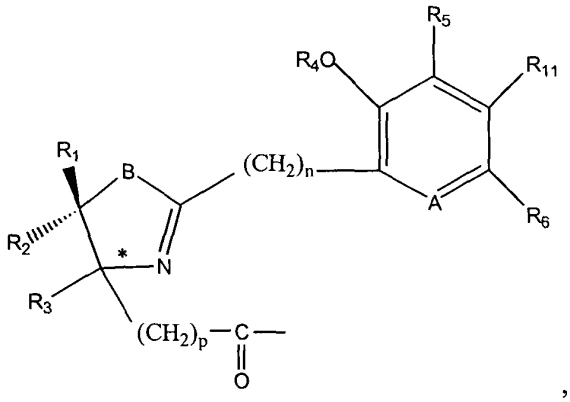
;

Y is



; and

Z is



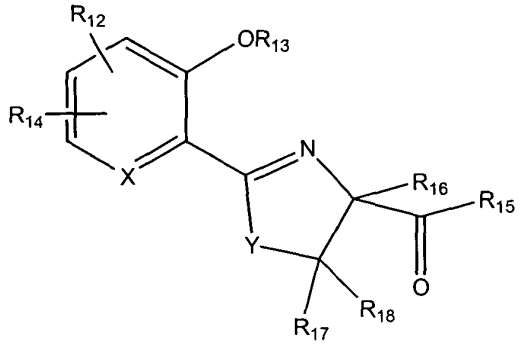
,

wherein each of the substituents shown is defined above;

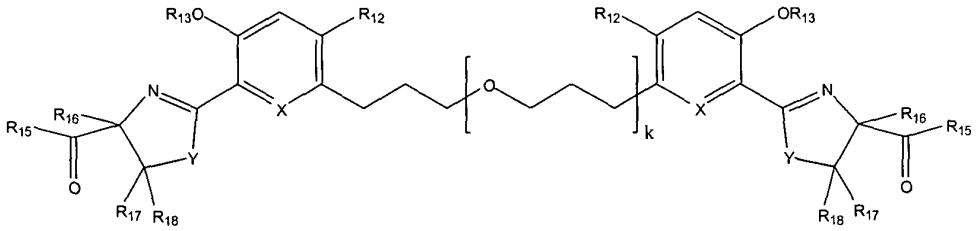
or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$

and $R_2$ are –H, $R_3$ is –$CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0.

18. A method of preventing or inhibiting oxidation of a substance *in vitro*, comprising the step of contacting said substance with an effective amount of a antioxidant represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, –$OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, -$R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, -$OR_{20}$, or –N($R_{20}$)OH;

X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

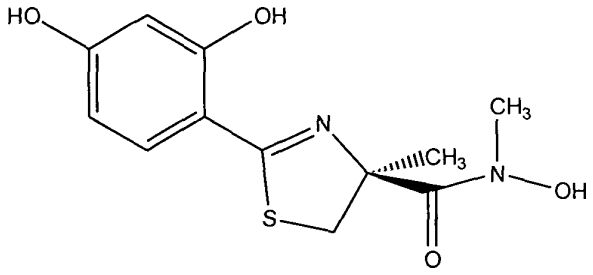
k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is $-CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

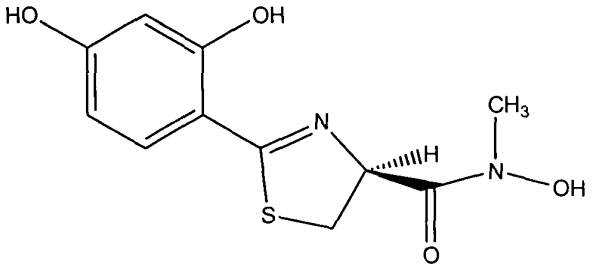
19. The method of Claim 18, wherein $R_{12}$ is –H, –OH, $-OCH_3$; $R_{13}$ is –H; $R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, and $R_{20}$ are each independently –H or $-CH_3$; $R_{15}$ is –OH or $-N(R_{20})OH$; and k is 1 or 2.

20. The method of Claim 19, wherein the substance is a food product.

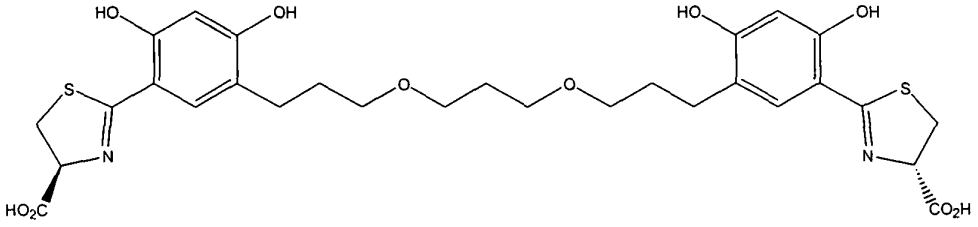
21. The method of Claim 19, wherein the antioxidant is represented by a structural formula selected from the group consisting of:



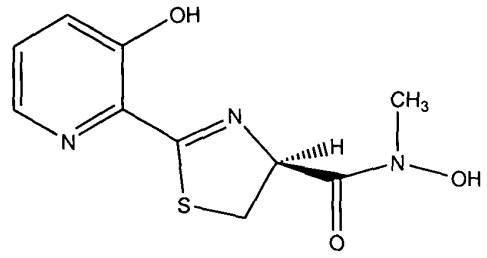

(IV);



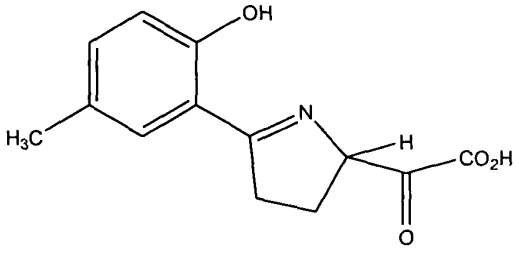

(V);



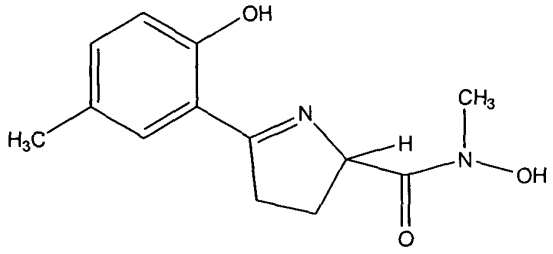

(VI);



(VII);

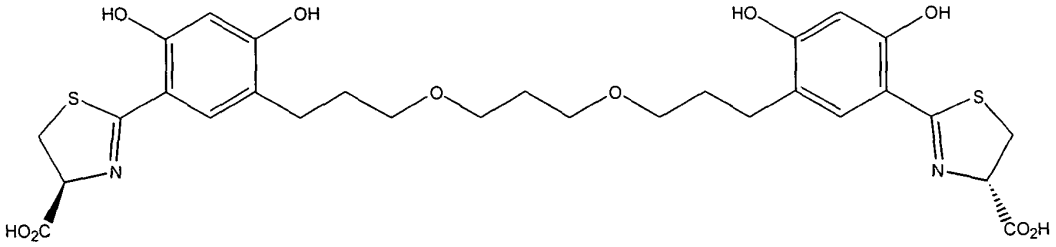


(VIII); and



(IX).

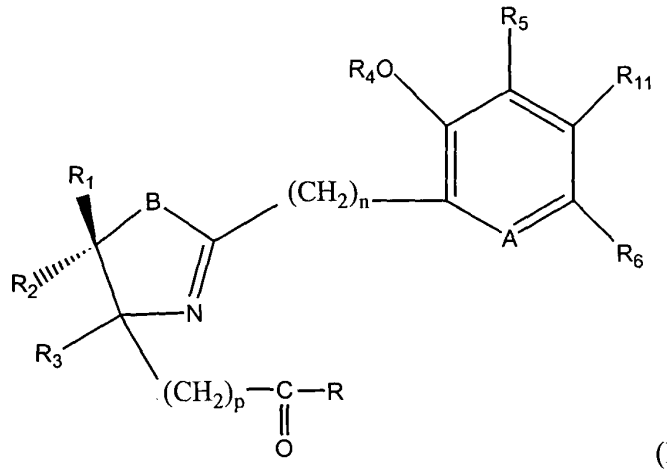
22. The method of Claim 21, wherein the antioxidant is represented by the structural formula:



(VI).

23. A method of treating a patient in need of antioxidant therapy with a compound represented by Structural Formula (I), provided said patient does not suffer from inflammatory bowel disorder or trivalent metal overload, comprising the step of

administering to the patient a therapeutically effective amount of a compound represented by Structural Formula (I):



(I)

wherein:

R is -OH, $-OR_7$, $-N(OH)R_8$;

$R_1$ is –H, $-CH_3$, or an alkyl of 1-6 carbons;

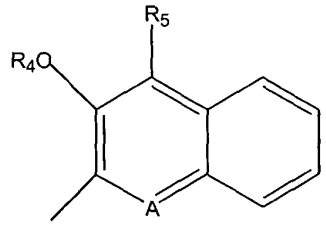
$R_2$ is –H, $-CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, $-CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

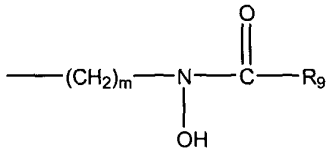
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:



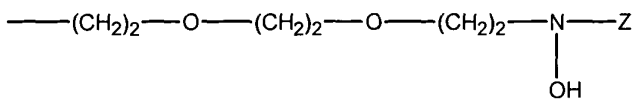
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

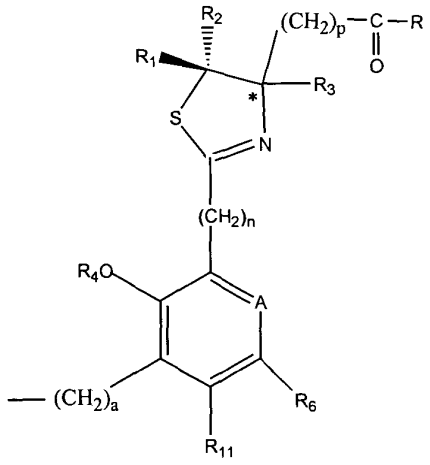
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

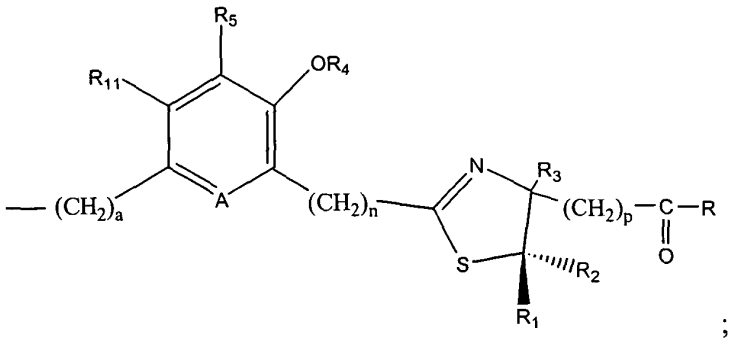
p is 0, 1 or 2;

X is



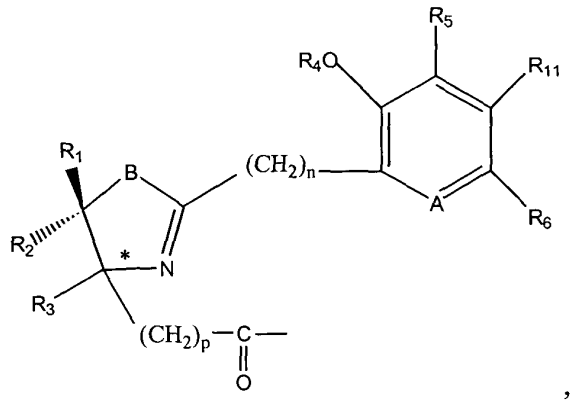
;

Y is



; and

Z is

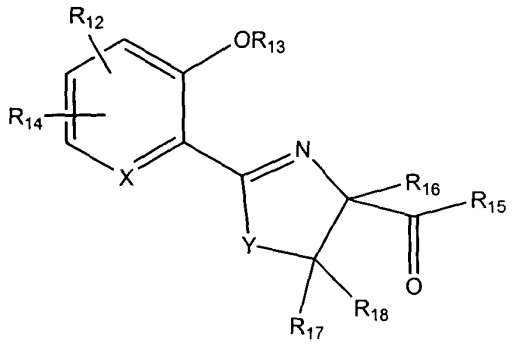


,

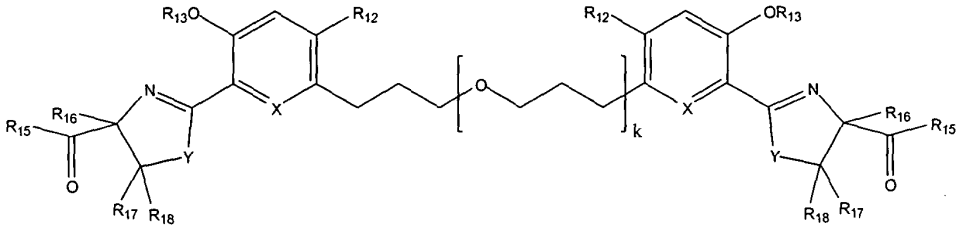
wherein each of the substituents shown is defined above;

or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$ and $R_2$ are –H, $R_3$ is $–CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0.

24. A method of treating a patient in need of antioxidant therapy with a compound represented by Structural Formula (II) or Structural Formula (III), provided said patient does not suffer from inflammatory bowel disorder or trivalent metal overload, comprising the step of administering the patient a therapeutically effective amount of a compound represented by Structural Formula (II) or (III):



(II)



(III),

wherein:

$R_{12}$ is –H, –$OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, -$R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, -$OR_{20}$, or –N($R_{20}$)OH;

X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

k is an integer;

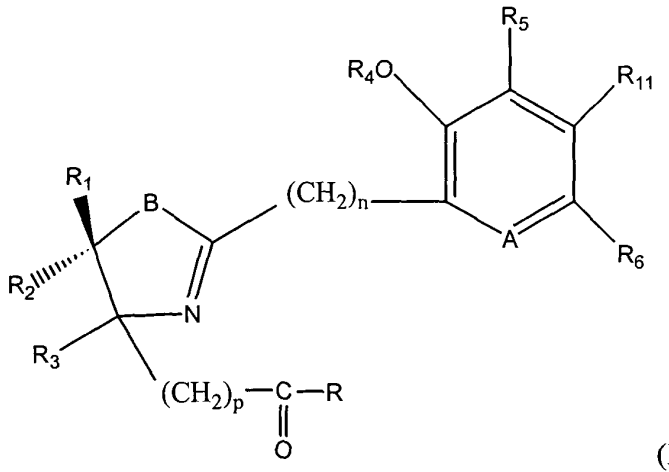
or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is –$CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

25. The method of Claim 24, wherein $R_{12}$ is –H, –OH, or –$OCH_3$; $R_{13}$ is –H; $R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, and $R_{20}$ are each independently –H or –$CH_3$; $R_{15}$ is –OH or –N($R_{20}$)OH; and k is 1 or 2.

26. The method of Claim 25, wherein the patient in need of antioxidant therapy has or is at risk of having elevated levels of reactive oxygen species.

27. The method of Claim 26, wherein the reactive oxygen species are selected from the group consisting of superoxide, hydrogen peroxide, an organic peroxide, hydroxyl radical, hydrogen peroxyl radical, an organic peroxyl radical, singlet oxygen, or a combination thereof.

28. A method of scavenging free radicals, comprising the step of contacting said free radicals with a compound represented by Structural Formula (I):




(I)

wherein:

R is -OH, -$OR_7$, -N(OH)$R_8$;

$R_1$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

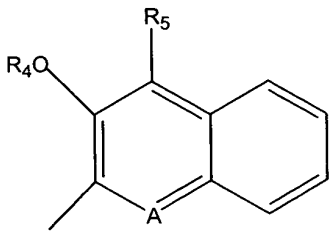
$R_2$ is –H, -$CH_3$, or an alkyl of 1-6 carbons;

$R_3$ is –H, -$CH_3$, or an alkyl of 1-6 carbons, or $R_2$ and $R_3$ together form a double bond;

$R_4$ is -H, acyl of 1-4 carbons, or alkyl of 1-4 carbons;

$R_5$ is -H, -OH, -O-acyl of 1-4 carbons, -O-alkyl of 1-4 carbons, or –L-X;

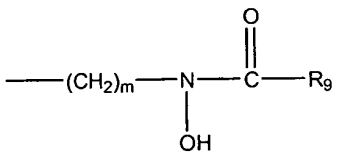
$R_6$ is -H, -OH, alkyl of 1-6 carbons, a halogen, -L-Y, or $R_6$ is -C=C-C=C-, which together with $R_{11}$ forms a fused ring system as follows:



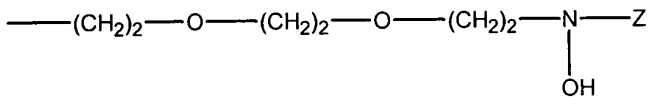
;

$R_7$ is alkyl of one to four carbons or optionally substituted benzyl;

$R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl,



, or



;

$R_9$ is -H, alkyl of one to four carbons, or optionally substituted benzyl;

$R_{11}$ is -H, -OH, -O-acyl of 1-4 carbons, or -O-alkyl of 1-4 carbons;

A is N, CH, or C(OH);

B is S, O, $NR_9$, $CH_2$ or $CH_2S$;

L is an alkylene group of 3 to about 20 carbon atoms which is optionally interrupted by one or more oxygen atoms;

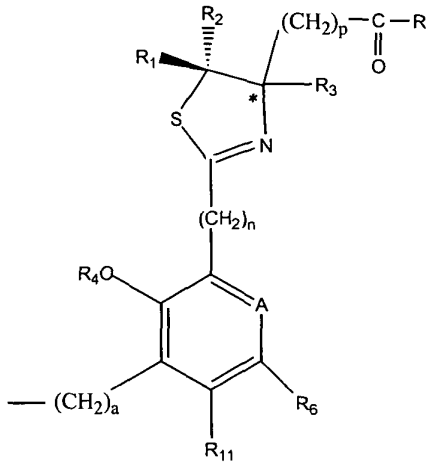
a is 2 or 3;

m is an integer from 1 to 8;

n is 0, 1 or 2;

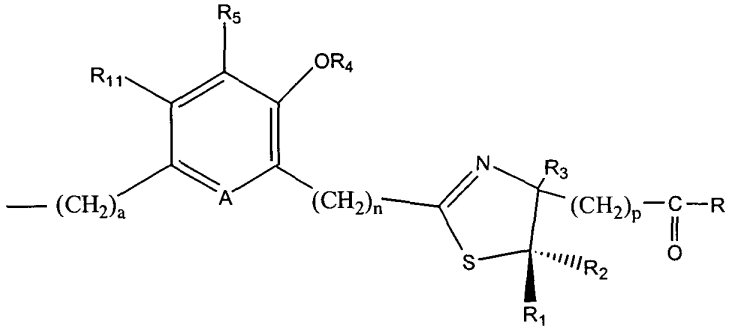
p is 0, 1 or 2;

X is



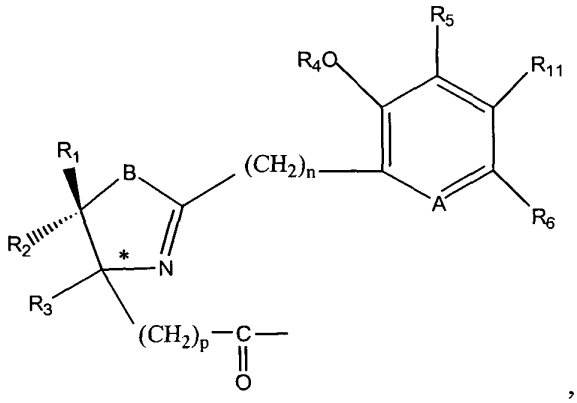
;

Y is



; and

Z is



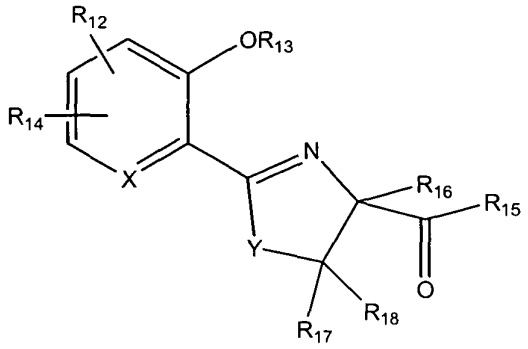
,

wherein each of the substituents shown is defined above;

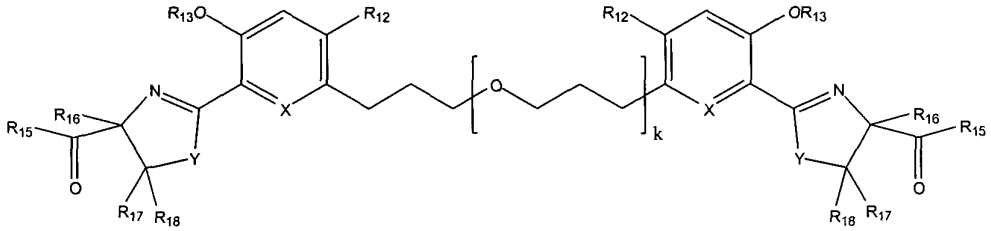
or a compound of formula (I) wherein the ring containing the B and N moieties is fully reduced and contains no double bonds; or a pharmaceutically acceptable salt of the compound represented by formula (I) or a stereoisomer of the compound or mixture of stereoisomers; with the proviso that when R is –OH, $R_1$

and $R_2$ are –H, $R_3$ is $–CH_3$, $R_4$, $R_5$, $R_6$, and $R_{11}$ are –H, A is N, and B is S, then n and p are not 0.

29. A method of scavenging free radicals, comprising the step of contacting said free radicals with a compound represented by Structural Formula (II) or Structural Formula (III):



(II)



(III),

wherein:

$R_{12}$ is –H, $–OR_{19}$, or an –O-acyl group;

$R_{13}$ is –H, $-R_{19}$, or an acyl group;

$R_{14}$, $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, and $R_{20}$ are each independently –H or a lower substituted or unsubstituted alkyl group, or $R_{16}$ and $R_{18}$ together form a double bond;

$R_{15}$ is –OH, $-OR_{20}$, or $–N(R_{20})OH$;

X is CH or N;

Y is S, CH, O, $NR_{20}$, or $SCH_2$; and

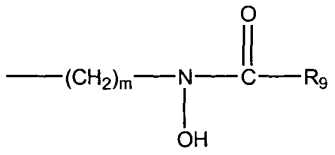
k is an integer;

or a pharmaceutically acceptable salt thereof, provided that for compounds represented by Structural Formula (II) when $R_{12}$, $R_{13}$ and $R_{14}$ are -H, $R_{15}$ is –OH, $R_{16}$ is $-CH_3$, $R_{17}$ and $R_{18}$ are –H, and X is N, then Y is not S.

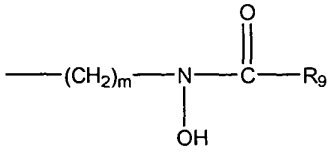
30. The method of Claim 29, wherein said scavenging prevents or inhibits free radical-mediated damage to cells, tissues or organs.

31. The method of Claim 30, wherein the free radicals are selected from the group consisting of hydroxyl radical, hydrogen peroxyl radical, organic radical, organic hydroxyl radical, organic peroxyl radical, and combinations thereof.

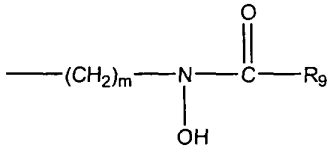
32. The method of Claim 1, wherein $R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl, or



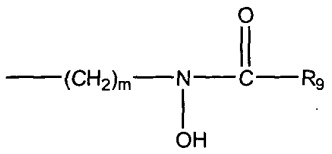
33. The method of Claim 9, wherein $R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl, or



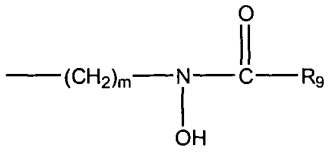
34. The method of Claim 15, wherein $R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl, or



35. The method of Claim 17, wherein $R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl, or



36. The method of Claim 23, wherein $R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl, or



37. The method of Claim 28, wherein $R_8$ is -H, alkyl of one to four carbons, optionally substituted benzyl, or